

REMARKS

The Applicants request reconsideration of the rejection.

Claims 1, 3-5, 7-9, and 20 are pending.

Claim 5 was objected to by the Examiner for the informality noted on page 2, item 3 of the Office Action. The Applicants have amended claim 5 as required by the Examiner.

Claims 2 and 6-7 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claims 2 and 6 have been canceled without prejudice, and claim 7 has been amended to be dependent from claim 1. The objectionable language in claim 6 resulted from a typographical error. However, the Applicants, respectfully, do not agree with the Examiner's finding that claim 2 requires that the third beam performs the claimed "monitoring", despite the Examiner's analysis. It is believed to be an appropriate interpretation of the claimed expression that the third beam is reflected so that the quantity of light can be monitored ("a third beam... for monitoring the quantity of light") in the same manner that, for example, one might say that "a computer is for writing e-mail messages", even though the computer does not perform the writing. Nevertheless, claim 2

has been canceled to focus prosecution on the remaining claims.

Claims 2 and 6 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The issues regarding claims 2 and 6 are the same as discussed above with respect to the rejection under the first paragraph of §112. As noted, claims 2 and 6 have been canceled to focus prosecution on the remaining claims.

Claims 1, 3-7, and 10-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nemoto U.S. Patent No. 6,314,063 (Nemoto) in view of Ishihara U.S. Patent No. 5,978,404 (Ishihara) and Kume U.S. Patent No. 5,727,111 (Kume). Claims 8-9 and 21-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nemoto, Ishihara, and Kume as applied to claims 1, 3-7, and 10-12 above and further in view of Kawachi et al U.S. Patent No. 4,750,799 (Kawachi).

The Applicants earnestly assert patentability in the optical head claimed in claim 1, having the combination of first, second, and third photodetector means, in which the first photodetector means obtains out-of-focus detection signals based on laser beams having been reflected by a recording medium surface, the second photodetector means

obtains a tracking error detection signal and an information reproduction signal, and the third photodetector means monitors the quantity of light emitted from the first or second laser light source; and in which the first photodetector means includes first detecting means for detecting the out-of-focus detection signal based on the laser beam from the first laser light source, and second detecting means for detecting the out-of-focus detection signal based on the laser beam from the second laser light source, the first and second detecting means being spaced away from each other.

Against these limitations, the Examiner cites Nemoto as disclosing the first photodetector means at 5 and the second photodetector means at 6, with the third photodetector means being found at 53g in Kume. The Examiner further finds the first and second detecting means of the first photodetector means in regions a to h in Nemoto's Figure 8. Ishihara is applied as teaching that it is well known to use a diode emitting two wavelengths for use with a CD and a DVD.

The Examiner's analysis, however, does not meet the requirement of a prima facie case of obviousness. In accordance with the invention as claimed in claim 1, light of two distinct wavelengths is provided from two laser light sources formed on a single substrate. The light beams are reflected by a mirror on the substrate in a direction away

from and normal to the substrate surface. After being reflected by the recording medium surface, the light beams are received by the first and second detecting means, respectively, of the first photodetector means for obtaining out-of-focus detection signals. The entire optical head is thus compact in its arrangement on the single substrate, including light sources, mirror, and photodetector elements.

Nemoto, as noted by the Examiner, substantially fails to contemplate the advancements of the present invention. In particular, Nemoto does not disclose two laser light sources having distinct wavelengths, the mirror constituting a part of a recess in which the first and second laser light sources are formed, or the first, second, and third photodetector means as claimed. Therefore, the Examiner attempts to combine the teachings of Ishihara, which does indeed teach a dual-wavelength laser source which provides compatibility with multiple recording medium formats.

In order to make the combination suggested by the Examiner, one must recognize the express teachings of Nemoto and Ishihara, and be careful not to modify Nemoto beyond that which Ishihara can be fairly said to suggest. Thus, where Ishihara teaches a laser beam emission apparatus having a universal optical pickup laser light source, the Examiner

would have Ishihara's laser light source arrangement substituted for the source for the light source for Nemoto.

However, the resulting device would provide light beams of two distinct wavelengths, emitted toward a beam splitter 8a of Nemoto toward an optical disc, reflected back from the optical disc and through the beam splitter 8a to the first photodetector 5, and reflected therefrom to the reflective surface 8b and onto the second photodetector 6.

This resulting device would not have the following elements required by claim 1: the first and second laser light sources being mounted in a recess formed in a substrate, a surface of which has been partially removed; a mirror constituting a part of the recess, and arranged to reflect laser beams emitted from the first and second laser light sources to be outputted in a direction away from and normal to the substrate surface; first photodetector means including first detecting means for detecting the out-of-focus detection signal based on the laser beam from the first laser light source, and second detecting means for detecting the out-of-focus detecting signal based on the laser beams from the second laser light source, the first and second detecting means being spaced away from each other; second photodetector means for obtaining a tracking error detection signal and an information reproduction signal; and third photodetector means

for monitoring the quantity of light emitted from the first or the second laser light source.

Notably, neither Nemoto nor Ishihara describes the first and second detecting means. As noted by the Examiner, Nemoto only uses a single light source, and thus has no need for first and second detecting means for detecting signals based on laser beams from two different light sources having distance wavelengths. The only mention in Ishihara of light detection means is the "photoreceptor" mentioned in column 5, line 21, which "may also be incorporated into the silicon substrate 2." However, there is no discussion of how Ishihara would employ the photoreceptor or mount it to the substrate, or whether such a photoreceptor would have first and second detecting means as claimed.

Although the Examiner asserts that "one of ordinary skill in the art would have realized that Nemoto's system inherently has two wavelengths in the diode, one for CD and one for DVD" (Office Action at page 5, lines 3-5), the standard of inherency is great, and cannot be met as asserted by the Examiner. Nemoto's system is singularly directed to a light emitting and receiving device that utilizes a single wavelength. There is neither disclosure nor suggestion of a diode having two wavelengths, nor any purpose for having such a diode.

Further, the Examiner asserts that Ishihara's laser light sources are mounted in a recess formed in a substrate, a surface of which has been partially removed, citing column 6, lines 48-60; column 2, lines 55-65; and column 3, lines 40-61. The passage in column 6, while discussing the etching of a recess 11 in Figure 2, nevertheless describes mounting a beam splitter 6 in the recess. As clearly shown in Figure 2, laser chips 4 and 5 are mounted on top of the surface 2a of the substrate 2, up against two of the surfaces of the beams splitter 6. Columns 2 and 3 add nothing to support the Examiner's contention. Thus, neither Nemoto nor Ishihara, nor the combination of Nemoto and Ishihara, discloses the mounting of first and second laser light sources as claimed.

In addition, in the combination of Nemoto-plus-Ishihara, the Ishihara head appears to emit the output laser light beams in a direction fully parallel to the surface of substrate 2. There is no suggestion or motivation to modify Ishihara so as to provide the output direction as claimed. Although the Examiner cites column 6, line 35 through column 7, line 5 for this feature, the passage nevertheless simply describes the configuration clearly shown in Figure 2 and just discussed.

To the extent that Nemoto shows a photodetector having plural regions a to h, as asserted by the Examiner, it is noted that photodetector 5 having these regions is for

detecting tracking error, not out-of-focus detection. Furthermore, the regions a to h detect laser light of a single wavelength from a single source, and there is neither disclosure nor suggestion that different regions should be used to detect different wavelength light from different light sources.

Because Kume does not teach the features missing from Nemoto and Ishihara, the combination of Nemoto, Ishihara, and Kume fails to render obvious the claimed invention.

Independent claim 5 also recites first and second laser light sources being mounted in a recess formed partially in a surface of a substrate, and first through third photodetector means substantially as claimed in claim 1. Claim 5 requires that the first photodetector means have means for detecting the out-of-focus detection signal based on the beam from the first laser light source, and means for detecting the out-of-focus detection signal based on the beam from the second laser light source. Therefore, claim 5 is patentable as argued above.

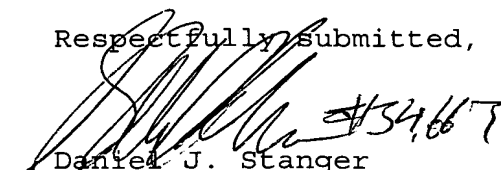
Independent claim 8 requires that the first through third photodetector means be formed monolithically on the substrate, and also recites the first and second laser light sources mounted in a recess formed partially in a surface of a substrate. Mounting the components as claimed in claim 8

provides a compact optical head that achieves all of the advantages set forth in the specification. Mounting the individual components, absent the teachings of the present invention, is a complex matter requiring complex alignment of the elements, with accompanying deterioration of the optical head performance for any misalignment. Therefore, the present invention provides a patentable advancement over the art, even if one considers the teachings of Kawachi. In this regard, although the Examiner appears to strongly object to the Applicants' previous statement about Kawachi failing to teach elements missing from the other references applied in the rejection, it is nevertheless true that the combination rejection must be attacked in its sum. Therefore, because none of Nemoto, Ishihara, Kume, or Kawachi teaches the monolithic arrangement of the photodetectors and the mounting of the laser light sources as claimed, claim 8 patentably defines over the prior art.

Each of the dependent claims inherits the patentability of its respective independent claim. Therefore the Applicants submit that all claims patentably define over the prior art of record.

In view of the foregoing remarks and amendments,
Applicants request reconsideration of the rejection and
allowance of the claims.

Respectfully submitted,

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